

Abstract

Title: Paving the Path for Human Space Exploration: The Challenges and Opportunities

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Lauri Hansen, Director of Engineering at NASA Johnson Space Center will discuss the challenges of human space exploration. The future of human exploration begins with our current earth reliant missions in low earth orbit. These missions utilize the International Space Station to learn how to safely execute deep space missions. In addition to serving as an exploration test bed and enabling world class research, the International Space Station enables NASA to build international and commercial partnerships. NASA's next steps will be to enable the commercialization of low earth orbit while concentrating on developing the spacecraft and infrastructure necessary for deep space exploration and long duration missions. The Orion multi-purpose crew vehicle and the Space Launch System rocket are critical building blocks in this next phase of exploration. There are many challenges in designing spacecraft to perform these missions including safety, complex vehicle design, and mass challenges. Orion development is proceeding well, and includes a significant partnership with the European Space Agency (ESA) to develop and build the Service Module portion of the spacecraft. Together, NASA and ESA will provide the capability to take humans further than we have ever been before – 70,000 km past the moon. This will be the next big step in expanding the frontiers of human exploration, eventually leading to human footprints on Mars.